

REMARKS

Claims 1 and 17 have been amended. Thus, claims 1, 3-5 and 7-21 remain presented for examination. Support for the amendment to claim 1 may be found in the specification at page 6, lines 16-20, which recites that "the terminal structure can be introduced at a polymer terminal, for example, by adding a chain transfer agent containing a $-CR^1R^2OH$ group during production of the polymer by radical polymerization using a monomer and a polymerization inhibitor. In this case, the structural unit (M1) containing the terminal structure is a structural unit (M1) derived from the chain transfer agent." One such terminal structure referred to in this section is a $-CR^1R^2OH$ group. Thus, the $-CR^1R^2OH$ group derived from the chain transfer agent can be bonded only to a principal chain terminal of a polymer of the resin. Support for the amendment to claim 17 may be found in the specification at page 31, lines 5-20. Thus, no new matter has been added and entry of these amendments is respectfully requested. Reconsideration and withdrawal of the present rejections in view of the amendments and comments presented herein are respectfully requested.

Rejection under 35 U.S.C. §112, second paragraph

Claim 17 was rejected under 35 U.S.C. §112, second paragraph as being indefinite for not setting forth any steps involved in the process. Claim 17 as amended recites the steps by which the method is performed. In view of the claim amendment, Applicants respectfully request reconsideration and withdrawal of the rejection under 35 U.S.C. §112, second paragraph.

Rejection under 35 U.S.C. §101

The Examiner rejected Claim 17 was under 35 U.S.C. §101, alleging that the claimed recitation of a use, without setting forth any process steps, results in an improper process claim under 35 U.S.C. §101. Claim 17 as amended recites the steps by which the method is performed. In view of the claim amendment, Applicants respectfully request reconsideration and withdrawal of the rejection under 35 U.S.C. §101.

Rejections under 35 U.S.C. §102(b)

Claims 1-7, 11-13, 16, 17, 19 and 21 were rejected under 35 U.S.C. §102(b) as being anticipated by Przybilla et al. (*SPIE*, Vol. 1672, Advances in Resist Technology and Processing).

Claim 1 as amended recites that the $-CR^1R^2OH$ group is bonded at a principal chain terminal of a polymer of the resin. Przybilla et al. disclose a resin for a photoresist composition containing a 2-hydroxyhexafluoroisopropyl (2-HHFIP) group incorporated in aromatic monomers such as styrene and polymers (see page 501, paragraph 2, and page 506, table 3). In the resin of Przybilla et al., the $-CR^1R^2OH$ group is bonded only at a side chain of a monomer (structural unit) constituting a polymer of the resin. Therefore, the resin of Przybilla et al. and the resin recited in the present claims are structurally different. Accordingly, claim 1, and claims 2-7, 11-13, 16, 17, 19 and 21 which depend on claim 1, either directly or indirectly, are also not anticipated by Przybilla et al.

In view of the claim amendments and comments presented above, Applicants respectfully request reconsideration and withdrawal of the rejection under 35 U.S.C. §102(b).

Rejection under 35 U.S.C. §102(b)/103(a)

Claims 1-3, 5, 7-13, 16, 17, 19 and 21 were rejected under 35 U.S.C. §102(b) as being anticipated by, or, in the alternative, under 35 U.S.C. §103(a), as being obvious over Pawlowski et al. (U.S. 6,358,665).

Claim 1 as amended recites that the $-CR^1R^2OH$ group is bonded at a principal chain terminal of a polymer of the resin. Pawlowski et al. discloses a radiation sensitive composition containing a homopolymer or copolymers of a hydroxystyrene resin with other monomers such as a hydroxyl-styrene based resin including 3-(2-hydroxy-hexafluoropropyl-2)-styrene and 4-(2-hydroxy-hexafluoropropyl-2)-styrene as co-monomers (see column 13, line 30 to column 14, line 3). In the resin of Pawlowski et al., the $-CR^1R^2OH$ group is bonded only at a side chain of a monomer (structural unit) constituting a polymer of the resin. Therefore, the resin of Pawlowski et al. and the resin recited in the present claims are structurally different. Thus, the claims cannot be anticipated by this reference.

The present claims are also not rendered obvious by Pawlowski et al. since a claim element, namely the bonding of the $-CR^1R^2OH$ group at a principal chain terminal of a polymer of the resin, is neither disclosed nor suggested by this reference. Moreover, as disclosed in the present specification at page 18, line 15-19, the structures of the resins for photoresist compositions recited in the present claims play an unexpected role in improvement of the LER characteristics, improvement of the resolution by reduction in resist pattern collapse,

improvement of the depth of focus characteristic and decrease of the level of defects. In addition, as described in the present specification at page 18, line 21 to page 19, line 4:

whereas the polymer terminals of conventional resin components obtained by radical polymerization include structures derived from hydrophobic polymerization initiators or hydrophobic chain transfer agents (terminators), which may inhibit the solubility of the resin in the alkali developing solution, in the present invention, the existence of the electron attractive group means the hydrogen atom of the hydroxyl group can readily dissociate, thereby imparting a suitable degree of acidity to the resin, and consequently improving the solubility of the resin in the alkali developing solution, and improving the LER characteristics at the interface between the exposed portions and the unexposed portions of the resist pattern.

These unexpected advantages of the resulting resins would effectively rebut any *prima facie* case of obviousness if one were present. Since claims 2, 3, 5, 7-13, 16, 17, 19 and 21 depend on claim 1, either directly or indirectly, they are also not anticipated (or rendered obvious) by Pawlowski et al.

In view of the amendments and comments presented above, Applicants respectfully request reconsideration and withdrawal of the rejection under 35 U.S.C. §102(b)/103(a).

Rejections under 35 U.S.C. §103(a)

Claims 14 and 15 were rejected under 35 U.S.C. §103(a) as being unpatentable over Pawlowski et al., and further in view of Lamanna et al. (U.S. 5,554,664). Claims 14 and 15 indirectly depend on claim 1. As described above, Pawlowski et al. neither disclose nor suggest that the $-\text{CR}^1\text{R}^2\text{OH}$ group is bonded at a principal chain terminal of a polymer of the resin as recited in the presently amended claims. Lamanna et al. teaches that a compound comprising an imide anion is used as a polymerization initiator activated by energy (e.g. thermal, radiation or photosensitive), which does not remedy the defect in the teaching of Pawlowski et al. Because this claim element is missing from both references, and in view of the unexpected results discussed above, claims 14 and 15 cannot be obvious in view of this combination of references.

Claims 18 and 20 were rejected under 35 U.S.C. §103(a) as being unpatentable over Feiring et al. (US 2005/0203262). Claims 18 and 20 depend, directly and indirectly, respectively, on claim 1. Feiring et al. neither disclose nor suggest that the $-\text{CR}^1\text{R}^2\text{OH}$ group is bonded at a principal chain terminal of a polymer of the resin as recited in the presently amended claims. Thus, the claims cannot be rendered obvious by this reference.

In view of the amendments and comments presented above, Applicants respectfully request reconsideration and withdrawal of the rejection under 35 U.S.C. §103(a)

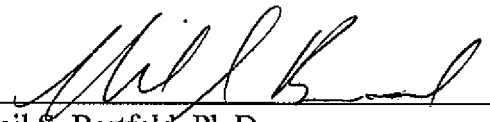
CONCLUSION

Applicants submit that all claims are in condition for allowance. However, if minor matters remain, the Examiner is invited to contact the undersigned at the telephone number provided below.

Respectfully submitted,

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